BEFORE
THE PUBLIC SERVICE COMMISSION
OF SOUTH CAROLINA
DOCKET NO. 2019-184-E

IN RE: South Carolina Energy Freedom Act (H.3659) Proceeding to Establish Dominion Energy South Carolina, Incorporated's Standard Offer, Avoided Cost Methodologies, Form Contract Power Purchase Agreements, Commitment to Sell Forms, and Any Other Terms or Conditions Necessary (Includes Small Power Producers as Defined in 16 United States Code 796, as Amended) - S.C. Code Ann. Section 58-41-20(A)	)	**AMEMDED SURREBUTTAL TESTIMONY OF ED BURGESS ON BEHALF OF SOUTH CAROLINA SOLAR BUSINESS ALLIANCE***

*Confidential Information has been redacted. A non-redacted copy is being filed under seal.

Q. Please state your name, occupation, and business address.

A. My name is Ed Burgess. I am a Senior Director at Strategen Consulting. My business address is 2150 Allston Way, Suite 400, Berkeley, California 94704.

Q. Are you the same Ed Burgess that offered direct testimony in this docket?

A. Yes.

Q. What is the purpose of your surrebuttal testimony?

A. The purpose of my surrebuttal testimony is to respond to certain issues raised by Dominion Energy South Carolina ("DESC") in (1) the rebuttal testimony of Mr. James Neely, (2) the rebuttal testimony of Joseph M. Lynch, Ph.D., and (3) the rebuttal testimony of Matthew W. Tanner, Ph.D.

I. <u>Surrebuttal to Rebuttal of Mr. James Neely</u>

Q. On page 18, Mr. Neely states that "It appears that Mr. Burgess has created this concept of a "zone of reasonableness" in an attempt to artificially raise the avoided costs in order to help solar developers. Do you agree with this suggestion?

A. No. This concept was raised in an attempt to describe the *de facto* reality that there are a range of plausible avoided costs, and a variety of subjective decisions that affect the outcome within this range.

Q. Please explain the precedent for the "zone of reasonableness" standard discussed in your direct testimony.

A. The "zone of reasonableness" standard is not novel. It was derived from the "just and reasonable" standard and has been outlined in case precedent for decades. Jeff Makholm and Kurt Strunk of the National Economic Research Associates Inc. (NERA) discuss the standard and its usage in court decisions extensively in an article in the Public Utilities Fortnightly journal.[1] The authors specifically cite a number of decisions that have held the Federal Energy Regulatory Commission (FERC) to the "zone of reasonableness" standard, including one by the Public Service Commission of Kentucky.[2] An article by energy attorney Adrienne Thompson of Troutman Sanders LLP in the George Washington Journal of Energy & Environmental Law[3] further outlines case law precedent where the Supreme Court has noted the "zone of reasonableness" standard in utility regulation[4] subject to an "arbitrary and capricious" standard under the Administrative Procedure Act (APA).[5]

[1] Makholm, Jeff D., and Kurt G. Strunk. "Zone of reasonableness: coping with rising profitability, a decade after restructuring." Public Utilities Fortnightly [1994], July 2011, p. 18-22.
[2] See: Permian Basin, 390 U.S. at 797, 88 S.Ct. 1344; Pub. Serv. Comm'n of Ky., 397 F.3d at 1009.
[3] Thompson, Adrienne L., "Preparing for the Energy Future by Creating It: What State Public Utility Commissions Can do to Promote Sustainable Energy Policies." George Washington Journal of Energy & Environmental Law, Fall 2016, Volume 7, Number 3. Link: https://gwjeel.com/wp-content/uploads/2017/01/adrienne-l-thompson-preparing-for-the-energy-future-by-creating-itwhat-state-public-utility-commissions-can-do-to-promote-sustainable-energy-policies-7-geo-wash-j-energy-envtl.pdf
[4] See, e.g., In re Permian Basin Area Rate Cases, 390 U.S. 747, 767 (1968) (citing FPC v. Natural Gas Pipeline Co. for the rule that courts are without authority to set aside any rate selected by the Commission which is within a "zone of reasonableness."); see also Fed. Energy Regulatory Comm'n v. Pennzoil Producing Co., 439 U.S. 508, 517, (1979) (citing Permian Basin Area Rate Cases for support of the rule); Fed. Power Comm'n v. Natural Gas Pipeline Co. of Am., 315 U.S. 575, 585, (1942) ("Assuming that there is a zone of reasonableness within which the Commission is free to fix a rate varying in amount and higher than a confiscatory rate.").
[5] 42 F.3d 659 (D.C. Cir. 1994); see generally Administrative Procedure Act, 5 U.S.C. § 706(2)(A) (directing courts reviewing agency orders to "hold unlawful and set aside agency action, findings, and

The "zone of reasonableness" has also been incorporated into a new framework for FERC in deciding whether the base return on equity for transmission investments is just and reasonable. On October 16, 2018, FERC issued an order addressing four complaint proceedings involving the New England Transmission Owners' base rate of return on equity (ROE).[6][6] The order describes FERC's "proposed framework" for deciding whether an existing ROE remains just and reasonable in a complaint proceeding, which includes the establishment of a "zone of reasonableness."

Q. Would the adopting the "zone of reasonableness" standard violate either PURPA or Act 62 by creating QF rates that do not reflect the utility's actual avoided costs?

A. No. Actual avoided costs are unfortunately hard to determine because of a variety of different inputs that are projected. For example, there is no way to perfectly predict load growth or commodity prices in 5 or 10 years. As such, models are used to approximate the avoided costs. Models are only a representation of reality and naturally insert uncertainty into the outputs. The "zone of reasonableness" standard recognizes the bounds of uncertainty in the avoided cost rates derived from the methodology that will be decided upon by the Commission.

conclusions found to be… arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law").

[6] Order 165FERC61,030 Directing Briefs re Vermont Transco, LLC Docket Nos.et al under EL11-66 et al. http://elibrary.ferc.gov:0/IDMWS/doc_info.asp?document_id=14712363

Q. Do you agree with Mr. Neely's assertion that you are proposing to charge $7.2 million to DESC customers for costs created by solar projects?

A. Not at all. First, I am proposing to temporarily defer DESC's proposed integration charge until an independent study can be completed. Thus there is no new charge being contemplated for DESC customers, only the absence of a charge on solar developers. Second, the costs that this charge is intended to offset for customers are speculative and uncertain and may not come anywhere close to the $7.2 million that DESC projects. I have explained this thoroughly in my direct testimony.

Q. On page 21, Mr. Neely states that DESC's avoided cost filings must be reasonably transparent because you were able to accurately describe the Company's AC methodology. Do you agree with this conclusion?

A. No. I was able to describe my understanding of DESC's approach in general terms, because DESC provided a high-level explanation of its methodologies in its direct testimony (as it has historically done in previous dockets setting avoided cost). But that is not sufficient for Act 62, which requires enough transparency "so that underlying assumptions, data, and results can be independently reviewed and verified by the parties and the commission." As described in my direct testimony, there are many instances in which Dominion did not provide access to adequate data and modeling details to verify the reasonableness of specific methodological choices or inputs and assumptions used by DESC, or its subsequent findings. Additionally, key portions of DESC's analysis on integration costs

were provided only one day before intervenor direct testimony was due, thus severely limiting my to analyze the results or serve discovery in a timely manner.

Q. Have the critical issues identified as lacking transparency in your original testimony (including rationale for selection of peak hours and peak seasons as well as hourly avoided cost data and marginal cost data for the base and change case in DRR analysis) been clarified or provided?

A. No. For example, SBA asked for hourly avoided costs, prior to being accumulated into DESC's selected time of use periods. DESC responded to say that it "does not have any information responsive to this request."[7] This is true despite DESC's admission in its rebuttal testimony that it "has the capability to rerun models with different inputs."[8] Moreover, as explained above a core part of DESC's analysis and modeling was included in an amendment to its testimony provided on September 20th, 2019 -- just 1 business day prior to the deadline for intervenor testimony in this proceeding. Notably, this did not allow sufficient time for a robust analysis or discovery questions to be answered prior to that direct testimony or this surrebuttal testimony.

Q. What is DESC's response to your concerns regarding the integration costs included for new solar QFs?

A. DESC's only response to my concern is that I provided no data or calculations. However, my concern was not based on a quantitative analysis, nor was one needed. Rather, my

[7] SBA Int 2-1
[8] Neely Rebuttal at p 24.

concern was based on obvious methodological flaws in DESC's approach which are outlined in my direct testimony. Even in his Rebuttal, Mr. Neely's claims are easily refuted without requiring any data or calculations. For example, he states, "the Company observed that solar generation increases the need for additional operating reserves and that additional operating reserves equal to 35% of the installed solar are needed to cover most of the 1-hour solar intermittency."[9] In parsing this statement it is obvious that Neely is conflating two different concepts: 1) the fact that solar generation increases the need for operating reserves and 2) that the DESC-calculated "1-hour solar intermittency" equates to 35% of the installed solar. This does not mean that the two values are equal. Even if we presume the 35% intermittency value is correct (which SBA disputes), this amount of reserves may already be available (as DESC claims they are at night, in response to criticisms that modeling of integration costs requires 35% reserves to be maintained 24 hours a day) and thus there is no incremental cost. DESC provides no data or calculations to support the premise that the 35% amount is incremental to what is already typical on DESC's system. Even in hours where solar is producing, there are times when output may be lower 35% and thus a 35% drop is infeasible. As mentioned above, due to the late provision of this information by DESC, there was insufficient time to conduct a robust analysis or serve discovery questions on these issues in time for this surrebuttal.

Q. On page 22, Mr. Neely raises the issues Mr. Burgess addressed around DESC's treatment of solar QFs with storage. Does Mr. Neely dispute these issues?

[9] Neely Rebuttal p 21.

A. No. Mr. Neely does not dispute any of my arguments regarding solar-with-storage QFs, which include storage dispatch capabilities, system size limitations, and utility control requirements.

Q. Why, then, does Mr. Neely raise these storage issues?

A. Mr. Neely briefly comments on the fact that DESC has not proposed a solar with storage tariff because it expects these projects will exceed 2MW and therefore require their own "unique" energy and capacity avoided cost calculations. However, his testimony provides no justification for why storage could not be included for projects smaller than 2 MW. Additionally, it's not clear that the "unique calculations" mentioned in Mr. Neely's rebuttal would not simply follow the same inappropriate storage modeling provided in DESC's proposal. This methodology requires the same scrutiny that Mr. Burgess proposed in his original testimony.

Q. What does Mr. Neely claim regarding SBA's critique of the four preselected time periods used in its avoided cost calculation?

A. Mr. Neely claims that the time periods "do not apply" to solar generation. However, this is patently untrue. DESC provided SBA with the confidential model results from its avoided cost simulation (e.g. "Avoided_Costs_-_SolarTA CONFIDENTIAL.xlsx"). These results indicate that four time periods were in fact used in the production cost model used to generate the avoided cost rates. A snapshot of these results is shown in the image below:

[redacted]

Q. On page 25, Mr. Neely states that Mr. Burgess' proposal to revise the way DESC levelizes its avoided energy costs across yearly periods brings no clear benefits and would increase the difficulty of administration. Do you agree?

A. No. Importantly, Mr. Neely acknowledges that Mr. Burgess' proposal is "not unreasonable". Moreover I don't believe it to be difficult to administer. In fact, this proposal only adds one option for QF developers as to how their avoided cost rates are calculated. This is in stark contrast to the multiple avoided cost rate options that DESC proposes for various technologies. This addition would not impose an excessive administrative burden. As for benefits, Mr. Burgess stated in his original testimony that having the alternative levelized cost option could make investment opportunities available to QF developers who otherwise might not participate.

Q. Do you agree with DESC's claim that adding resources to the model through increased imports/exports would serve to lower marginal costs?

A. It depends. While expanding the overall pool of resources generally tends to lower costs in the aggregate, it may raise costs for certain locations. This is especially true if the model includes certain locations with must-run units (e.g. coal, nuclear) where there is limited

ability to export. On a related note, the increased ability to import resources may be a way to address winter peaks, thereby shifting the capacity value towards summer months.

Q. What is DESC response to your concerns regarding the use of two different resource plans for calculating energy and capacity rates?

A. DESC's only response is to say that this is "appropriate." However, this does not change the fact that this approach fundamentally skews the results for each, and leads to lower overall avoided cost rates.

Q. How does DESC respond to your suggestions regarding the cost of purchased capacity?

A. DESC clarifies that the purchased capacity prices reflects a 3-month winter purchase at $13.50/kW. However, it is worth noting that DESC has had summer peaks in several of the last few years and generally has high summer loads. Thus, it is likely that DESC will need to purchase both summer and winter capacity resources. Assuming a six month purchase (rather than 3-month), this would equate to $27/kW if DESC's assumed values were used or $15.75/kW the PJM values are used.

Lynch

Q. What is DESC's primary claim regarding SBA's recommendation for capacity value?

A. DESC's rebuttal testimony continuously repeats a common refrain: that it is a winter peaking utility and that solar has no ability aid with winter peaks. Accordingly, it assigns no capacity value to solar resources.

Q. Do you agree with this assessment?

A. No. I agree with Mr. Horii's testimony that "the assumptions used by the Company to calculate avoided capacity for solar projects are overly simplistic and deterministic" and that there are other methods that could be used to calculate a more reasonable estimate of solar capacity value.

Q. When was DESC's peak day in each of the last 10 years?

A. In 6 of the last 10 years, DESC experienced a peak day during the summer. This includes 8/18/2017 (3pm), 7/28/2016 (3pm), 8/12/2013 (3pm), 7/26/2012 (3pm), 8/8/2011 (2pm), and 8/13/2010 (1pm).

Q. Would solar have contributed towards reducing these summer peaks?

A. Yes.

Q. What was DESC's all-time peak within this timeframe?

A. February 20, 2015, at 7am.

Q. Would a solar facility have contributed towards reducing this winter peak?

A. Yes. I modeled a single-axis tracking solar facilities located in Columbia, SC using NREL's PV Watts simulation tool. During the 7am hour on February 20th, the facility was producing at 19% of its MW-ac nameplate rating.

Q. Based on the analysis presented in your direct testimony, over the next 10 years, how many of the top 10 peak load hours (net of existing or contracted solar) in each year fall within summer months?

A. Over 50%.

Q. What do you conclude from these observations?

A. DESC must plan for both winter and summer peaks. Solar can contribute towards reducing both. This is in contrast to DESC's claim in its rebuttal that it is solely a winter peaking utility and that solar cannot contribute.

Tanner

Q. What does DESC suggest regarding your critique of modeling DESC's system as an island?

A. DESC suggests that this is inappropriate for self-sufficiency in planning and that exchanges between surrounding utilities are solely economic in nature. However, DESC appears to be conflating the issues of long-term capacity planning for reliability and near-term operations for managing variable load and resources. Power flows between surrounding utilities to manage variability on an operational time horizon are quite common, and should be seen as distinct from the long-term planning and procurement of resources each utility undertakes to ensure sufficient resources on its system. It is entirely appropriate to assume some level of interaction on an operational time horizon and this does not constitute a violation of "self-sufficiency."

Q. What observations does DESC make about the potential for combining BAAs or expanding reserve sharing agreements?

A. DESC confirms that these options would provide benefits to renewable integration. While I recognize that the implementation of such efforts would be complex, they should not be

discounted, and in fact should be considered a mitigating factor over the 10-year time horizon of the avoided cost calculation.

Q. How does DESC respond to your critiques regarding geographic diversity?

A. DESC states that "Due to the small size of DESC's service territory, there is a material limit to the ability for geographic diversity to reduce overall generation variability."[10] However, rather than speculate as to what the limit of this diversity might be, it would be easy enough to test this assumption by simulating additional locations within DESC' service territory. DESC has not done this analysis, but it should be performed (ideally through an independent integration study) before assuming that DESC's assumed limits are correct. Even if the four solar projects modeled are reasonably distributed around the service territory, the fact that there are very few projects could seriously skew the results.

Q. What is DESC's response to your critique of the 4 hour forecast window?

A. DESC confirms that this limitation is largely driven by the NREL data set. While it may be true that NREL developed this data set for integration studies, it is not true that it is an ideal representation of real world operations, nor is it necessarily the "state of the art" when it comes to forecasting practices. Regarding the production cost model, I am well aware that operating reserves can only be provided by units that are online and have the ability to ramp up. My observation was related to the fact that many units (including CCs) have the ability to come online within a 4-hour window. As such, they should be considered available for this purpose.

[10] Tanner Rebuttal at p 17

Q. What observations does DESC make regarding flexible reserves (as opposed to regulating reserves)?

A. While it is unclear exactly what DESC means by "flexible reserves" in this context, DESC indicates that regions like CAISO and ERCOT have experienced increased need for these requirements.

Q. Were flexible ramping reserves the focus of the DESC integration study?

A. No. It's not clear what the relevance of these statements is since DESC did not appear to focus on what flexible ramping requirements DESC might have in the future (as opposed to regulation and load following for addressing "solar drops").

Q. Based on your analysis of DESC's avoided cost methodologies, including the assumptions and inputs, what avoided cost rates does SCSBA propose that the Commission adopt in this proceeding?

A. First it must be noted that, as described above , DESC's avoided cost methodologies were not reasonably transparent and , lacking access to DESC's proprietary production cost modeling, it was not possible for SCSBA to calculate avoided cost rates using precisely the same methodologies employed by DESC. As discussed in my testimony, there are many methodological flaws in DESC's avoided cost calculations. In some cases it is possible to quantify the impact of those flaws on DESC's rates; in other cases it would only be possible to precisely quantify those effects by re-running DESC's production cost and other modeling, and using those results to calculate rates.

In my view, the most reasonable approach for the Commission to take, if it agrees that DESC's methodologies are flawed, would be to direct DESC to address these flaws and recalculate its rates. In my experience this is the approach usually taken by other state utilities commissions in situations like this.

However, if the Commission does not wish to take this approach, SCSBA has provided a set of proposed avoided cost rates, based on (1) where possible, a quantification of the impacts of DESC's methodological flaws, and (2) where quantification is not possible, a reasonable estimate of the impact based on my experience and expertise. SCSBA's proposed rates are attached in Exhibit **Burgess 2**.

Exhibit - Burgess 2

Rate Summary Table

	DESC Proposed	**SBA Proposed**
Rate PR-Standard Offer Avoided Energy Rate for Solar QF 2020-2024 ($/MWh) * Applicable to all QF technologies	$16.76/MWh	Peak Season Peak: $31.05/MWh Peak Season Off-Peak: $27.51/MWh Off-Peak Season Peak: $32.52/MWh Off-Peak Season Off-Peak: $28.93/MWh
Rate PR-Standard Offer Avoided Energy Rate for Solar QF 2025-2029 ($/MWh) * Applicable to all QF technologies	$15.66/MWh	
Avoided Capacity: Standard Offer Non-Solar/Technology-Neutral QF* *SBA recommends a single, technology-neutral standard offer rate. Our "technology-neutral QF" proposal, therefore, is intended to apply to all QF technologies, including solar.	$73.46/MWh (Dec-Feb, 6-9am)	Summer: $78.23/MWh (June-Sept, 2-7pm) Winter: $64.59/MWh (Dec-Feb, 6-9am)
Avoided Capacity: Standard Offer Solar QF's,* *All hours* *Applicable only if technology-neutral option is not offered	$0.00	$24.00/kW
Avoided Capacity: Solar with Storage *Applicable only if technology-neutral option is not offered	$3.17/kW per year	$24.00-$45.39/kW (depending on size and duration of storage)
Variable Integration Charge	$4.14/MWh	$0.00 (pending independent study)
Term of the PPA	10 years	10 years

**The periods are defined both seasonally and by time of day, with the "Peak Season" corresponding with the summer months of June through September, and the "Off-Peak Season" corresponding to the non-summer months of October through April. DESC's proposed peak season and peak hours are highlighted in yellow below. SBA's current proposal is based on these same periods.*

Hour beginning:	*0*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*
June - Sept																								
Oct & May																								
Nov - Apr																								